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TEMPORARY
INSTRUCTION MANUAL
PULSE GENERATOR
MODEL B-10

See ms 123

8944 LINDBLADE ST.,
CULVER CITY,
CALIFORNIA

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RUTHERFORD ELECTRONICS CO.
8944 Lindblade Street
Culver City, California

SPECIFICATIONS

The following are general specifications for the Model B-10 pulse generator:

OSCILLATOR REPETITION RATE

The internal osc. is continuously variable from 20 CPS to 2MCS in 5 ranges.

1.	20 CPS	200	CPS
2.	200 CPS	2	KCS
3.	2 KCS	20	KCS
4.	20 KCS	200	KCS
5.	200 KCS	2	MC/S

PULSE DELAY

The main pulse delay is continuously variable from 0.0 to 10,000 µsecs. in five ranges (refered to sync. pulse out.)

1.	0 µsec.	1	µsec.
2.	1 µsec.	10	µsec.
3.	10 µsec.	100	µsec.
4.	100 µsec.	1000	µsec.
5.	1000 µsec.	10000	µsec.

PULSE WIDTH

Main pulse width is continuously variable from 0.06 µsec. to 10,000 µsec. in five ranges.

1.	0.06 µsec.	1	µsec.
2.	1 µsec.	10	µsec.
3.	10 µsec.	100	µsec.
4.	100 µsec.	1000	µsec.
5.	1000 µsec.	10000	µsec.

TRIGGER REQUIREMENTS

To trigger the unit from an external source, the following trigger pulse is required:

Amplitude	6 Volts Min.
Rep. Rate	2MC/S Max.
Rise Time	.5 µsec. or less
Polarity	Positive or Negative

NOTE: At lower rep. rates and/or faster rise times, the unit triggers with a much lower amplitude pulse. The fast rise time of the sync. pulse out allows the Model B-10 to be triggered from the sync. pulse out from another B-10 at all rep. rates.

MAIN PULSE

The following are the specifications for the main pulse out:

Positive Pulse

1. Amplitude	15 Volts into 50Ω load
2. Rise Time	.020 µsec.
3. Fall Time	No greater than .020 µsec.
4. Undershoot	5% Maximum
5. Overshoot	5% Maximum

Negative Pulse

1. Amplitude	15 Volt Min. into 50Ω load
2. Rise Time	.020 µsec.
3. Fall Time	No greater than .030 µsec.
4. Undershoot	5% Maximum
5. Overshoot	5% Maximum

For both pulses:

Droop	0 - 1000 µsec. wide pulse - negligible 1000 - 10,000 µsec. wide pulse - 10% Max.
Duty Ratio	0.60 at any repetition rate

SYNC. PULSE OUT

A sync. pulse is available at a front panel connector. The sync. pulse out has the following sepecfications:

1. Amplitude	8 Volts O.C.
2. Width	.10 µsec. Min.
3. Rise Time	.020 µsec.
4. Polarity	Positive

See note and drawing on last page.

RUTHERFORD ELECTRONICS CO.
MODEL B-10 PULSE GENERATOR

GENERAL DESCRIPTION

The Model B-10 is a compact light weight unit designed for laboratory or field use. It is completely transistorized and so designed that it can be operated from the 115V 50 to 60 cycle line, or from its internal battery pack. It is designed to meet the rigid requirements of a great number of research and test applications. It is provided with duty cycle limiting to prevent damage to the output transistors under overload or short circuit conditions. In this manner, it insures long periods of reliable operation with a minimum of maintenance and repair problems.

The Model B-10 produces a train of 15V pulses at rep. rates from 20 C/S to 2 MC/S, pulse delay and width to 10,000 μsecs., rise and fall times of .02 μsecs., and permissible duty ratios up to .60 at full amplitude.

The B-10 generates these pulse trains in the following manner: The oscillator (rep. rate section) creates a continuous train of timing pulses to establish the rep. rate of the output pulse. These timing pulses are used to initiate the delay circuit. The output pulse from the delay circuit is differentiated. The leading edge is sent to an amplifier and shaped for use as the sync. pulse. The trailing edge of the differentiated delay pulse is used to initiate the width circuit. The pulse from the width generator is sent to the pulse forming circuits where the pulse is shaped.

2 N 627

TECHNICAL DESCRIPTION

FRONT PANEL CONTROLS

Coarse Repetition Rate (S101): Select the desired repetition rate range. On position marked "external trigger" the internal rep. rate generator is disabled and the external trigger pulse is shaped and used to trigger off the delay generator.

Fine Repetition Rate (R101): Interpolates between coarse ranges as selected by S101.

Coarse Delay (S102): Selects the delay range.

Fine Delay (R144): Interpolates between the coarse delay ranges as selected by S102.

Coarse Width (S103): Selects the desired width range.

Fine Wdith (R146): Interpolates between the coarse width ranges as selected by S103.

Attenuator + : Provides 5 steps of 10 db each for positive output pulse.

Attenuator - : Provides 5 steps of 10 db each for negative output pulse.

Fine Attenuator + : Continuously variable to 10 db.

Fine Attenuator - : Continuously variable to 10 db.

Function Switch (S107): Selects the mode of operation, that is, battery, A.C. or charge battery.

Trigger Polarity: Selects the proper polarity when operating the instrument from an external trigger source.

REP. RATE GENERATOR

Q101, Q102 and Q103 comprise the rep. rate generator. They are used in an emitter coupled astable circuit. The timing control is provided by R101, R102, C103 thru C107 and Q101. R102 sets the base level, or more properly, the reference level on the comparator Q102, and in this manner, controls the timing for the astable comprised of Q101 and Q103. A negative going pulse is coupled from the emitter of Q103 to the input of the trigger shaper which is comprised of Q301, Q302, Q303 and Q304. Q301 is used as a phase splitter with a negative pulse taken from the collector for a positive pulse in and a negative pulse taken from the emitter for a negative pulse in. Switch S106 selects the proper pulse polarity to drive the Schmitt trigger Q302 and Q303. The collector of Q303 is coupled

to the base of Q304. The collector load of Q304 is a pulse transformer T301. Magnetizing inductance of the transformer T301 is such that a very sharp pulse is generated. The pulse at secondary of transformer T301 is fed to the base of Q104. A diode is connected across the secondary of T301 to clip off the positive going waveform, since only the negative waveform is used.

DELAY GENERATOR

The delay generator is made up of Q104, Q105, Q106 and Q107 in an emitter coupled monostable circuit. The circuit is initiated by the pulse fed to the base of Q104 from the secondary of T301. Normally, Q106 is conducting until the negative pulse is applied to the base of Q104. This causes the collector of Q105 and Q104 to be raised to the emitter level. A positive going pulse is then coupled to the base of Q107 which is used as an emitter follower. The positive going waveform at the emitter of Q107 is coupled to the base of Q106 by capacitors C114 thru C118. This positive pulse at the base of Q107 turns it off and Q105 is turned on. The potential at the base of Q106 decays exponentially towards the collector supply voltage, with a time constant determined by R118, C114 thru C118. When the potential at the base of Q105 becomes slightly negative, regeneration takes place and the circuit returns to its original state. Transistors Q104 and Q105 are operating in the voltage mode, and Q106 is operating in the current mode. Capacitor C113 is used to pick off the collapse of the delay pulse. This waveform is negative going at the emitters of Q105 and Q106. The negative going spike is applied to the base of Q109 and is used to trigger off the width one shot.

WIDTH GENERATOR

The width generator is comprised of Q109, Q110, Q111 and Q112 in an emitter coupled monostable circuit. The width circuit is triggered by the negative going pulse coupled to the base of Q109 from the emitters of Q105 and Q106. Normally, Q111 is conducting until a negative pulse is applied to the base of Q109. This causes the collector of Q110 and Q109 to be raised toward the emitter level. A positive going signal is then coupled to the base of Q112 which is used as an emitter follower. The positive going waveform at the emitter of Q112 is coupled to the base of Q111 by the capacitors C122 thru C126. This positive pulse at the base of Q112 turns it off and Q110 is turned on. The potential at the base of Q111 decays exponentially toward collector supply with the time constant determined by R130 and C122 thru C126. When the potential

at the base of Q110 becomes slightly negative, regeneration takes place and the circuit returns to its original state. Transistors Q109 and Q110 are operating in the voltage mode. Q111 is operating in the current mode. The waveform at the collector of Q111 is taken off and applied through R131 and C121 to the base of NPN amplifier Q113. The pulse is amplified and applied to the base of Q114 which is a NPN emitter follower.

OUTPUT AMPLIFIERS

A positive pulse is taken from the emitter of Q114 and is applied to the base of Q115 and also to the base of Q116. For a positive pulse output the pulse taken from the emitter of Q114 is applied to the base of Q116; this pulse is positive going referred to ground. This pulse turns on Q116 which is an NPN switch. When this transistor turns on, the collector level falls from +18V. to ground. This gives a negative pulse which is coupled to the base of Q118 thru a coupling network made up of R140 and C136. R140 is the coupling resistor and C136 is used to preserve the rise time and to dissipate the stored charge in the base emitter region at the end of the pulse. Q118 is a PNP switch. The collector is returned to ground thru the collector load resistor and the emitter is returned to +18V. When the transistor is turned on, the collector level rises to the emitter level thus forming a positive going pulse. This positive going pulse is coupled to the base of Q120 which is an NPN emitter follower. The emitter load resistor R150 is returned to ground and the collector returned to +18V. The positive pulse at the emitter of Q120 is then applied to a five step attenuator which gives 50 db of attenuation. The attenuator is made up of five T sections of 10 db each. The output of the attenuator is fed to the positive pulse output jack located on the B-10 front panel. The output pulse is +15V P/P into a 50Ω load. The source impedance (resistance) with zero insertion is approximately 5.2Ω in the on condition or 2.2k in the off condition. The positive output pulse is referenced to ground and the quiescent level is in the order of 5.0 M.V. In other words, the base of the pulse is not at ground, (absolute) but is offset from ground in a positive direction by 5.0 millivolts.

For a negative pulse out the positive pulse taken from the emitter of Q114 is coupled to the base of Q115 by C131. Q115 is used as an inverting amplifier. The collector is returned to ground thru R141. The base resistor, R138 and the emitter resistor, R139 is returned to -18V. When the base is driven positive the transistor is turned on and the collector level falls toward the emitter level and forms a negative going pulse. This negative going pulse is coupled to the base of Q117 which is a PNP switch. The emitter is returned to ground thru R144 and C133. The collector is returned to -18V thru the collector load resistor, R146. The negative pulse coupled to the base of Q117 turns it on. This causes the collector to fall toward the emitter, thus forming a positive going pulse. This positive

pulse is coupled to the base of Q119 thru a coupling network made up of R145 and C137. R145 is used to establish the proper base current level. C137 is used to preserve the leading edge of the pulse and to dissipate the charge storage at the end of the pulse. Q119 is an NPN switch. The collector is returned to ground thru the collector load resistor R148 and the emitter is returned to -18V. When the base of Q119 is driven positive, the transistor is turned on and the collector level falls to the emitter thus forming a negative going pulse. This negative pulse is coupled to the base of Q121. Q121 is a PNP emitter follower. The collector is returned to -18V and the emitter returned to ground thru R151. The negative pulse developed across R151 is fed into a constant impedance attenuator. The attenuator consists of five T sections of 10 db each. The output of the attenuator is fed to the negative pulse output jack on the B-10 front panel.

The output pulse is -15 V minimum. P/P into a 50Ω load. The source impedance of the negative pulse with zero insertion on the attenuator is approximately 5Ω in the on condition and 2.2k in the off condition. The negative pulse is referenced to ground. The base of the pulse is offset from ground in a negative direction by approximately 4.0 millivolts.

The positive and negative pulses are available at the front panel connectors simultaneously. The leading edge of both pulses are approximately coincident. The departure from coincidence is approximately .008 μsecs.

POWER SUPPLYS

There are two (2) power supplies in the B-10: a positive regulated supply ground referenced and a negative supply ground referenced.

The positive supply furnishes the following regulated levels:

1. Positive 7.5 Volts Zener Diode Regulated
2. Positive 15.0 Volts Zener Diode Regulated
3. Positive 6-18 regulated by a 2 stage amplifier which also furnishes overcurrent protection and duty cycle limiting for the positive pulse output amplifiers.

The voltage control R217 is on the instrument front panel and is used as a fine attenuator for positive pulse output.

The negative supply furnishes a negative 6-18 V., regulated by a two stage transistor regulator. It has overcurrent and duty cycle limiting built into the regulator so that duty ratio and short circuit protection are provided for the output stages. The voltage level control R 213 is on the instrument front panel and is used as a fine attenuator for negative pulse output.

The power supply is used to charge the batteries on position 2 of the function switch. The ground return on the rectifier filter network is broken, and battery pack is placed across the positive and negative supply with R 215 and CR 213 in series, with one battery lead. CR 213 is used for reverse current protection and R 215 is used to provide constant potential charging of the batteries. The charge rate was established at 0.3 amperes in the discharged state. The charge rate tapers to approximately 0.09 amperes, as the batteries are brought up to charge. The charge rate is such that there will be no gassing of the cells.

BATTERY PACK

The battery pack consists of 30 Burgess #CD7 Nickle Cadmium Batteries. The batteries are connected in such a manner as to provide a +18.75 and -18.75 V referenced to ground.

NOTE 1 : Size D flashlight cells may be substituted for CD-7 cells in an emergency.

PARTS LIST

* ABBREVIATIONS *

cer	ceramic	k	kilohm of 10^3 ohms
comp	composition	m	milli or 10^{-3}
EMC	electrolytic, metal cased	meg	megohm or 10^6 ohms
EMT	electrolytic, metal tubular	MF	mylar film
f	farad	μ	micro or 10^{-6}
GMV	guaranteed minimum value	μμ	micromicro or 10^{-12}
h	henry	Ω	ohm
prec	precision	PT	paper tubular
SM	silvered mica	V	working volts, DC
var	variable	W	watt
WW	wire wound		

CAPACITORS

C101	.01 μf	fixed	cer	50V	GMV
C102	.1 μμf	fixed	cer	50V	GMV
C103	330 μμf	fixed	SM	500V	±5%
C104	3300 μμf	fixed	SM	500V	±5%
C105	.033 μf	fixed	MF	50V	±5%
C106	.33 μf	fixed	MF	50V	±5%
C107	3.3 μf	fixed	MF	50V	±5%
C108	120 μμf	fixed	SM	500V	±5%
C109	.01 μf	fixed	cer	50V	GMV
C110	.01 μf	fixed	cer	50V	GMV
C111	.01 μf	fixed	cer	50V	GMV
C112	180 μμf	fixed	SM	500V	±5%
C113	330 μμf	fixed	SM	500V	±5%
C114	220 μμf	fixed	SM	500V	±5%
C115	2200 μμf	fixed	SM	500V	±5%
C116	.022 μf	fixed	MF	50V	±5%
C117	.22 μf	fixed	MF	50V	±5%
C118	2.2 μf	fixed	MF	50V	±5%
C119	.01 μf	fixed	cer	50V	GMV
C120	180 μμf	fixed	SM	500V	±5%
C121	330 μμf	fixed	SM	500V	±5%
C122	220 μμf	fixed	SM	500V	±5%
C123	2200 μμf	fixed	SM	500V	±5%
C124	.022 μf	fixed	MF	50V	±5%
C125	.22 μf	fixed	MF	50V	±5%

CAPACITORS CONTD.

C126	2.2 µf	fixed	MF	50V	±5%
C127	.01 µf	fixed	cer	50V	GMV
C128	100 µf	fixed	EMC	25V	±5%
C129	100 µf	fixed	EMC	25V	±5%
C130	330 µµf	fixed	SM	500V	±5%
C131	4.7 µf	fixed	MF	35V	±5%
C132	470 µµf	fixed	cer	50V	GMV
C133	Value to be determined on final check out.				
C134	.25 µf	fixed	PT	50V	±20%
C135	.25 µf	fixed	PT	50V	±20%
C136	Value to be determined on final check out.				
C137	Value to be determined on final check out.				
C138	15-200 µµf	var	MICA	175V	
C139	15-200 µµf	var	MICA	175V	
C201	3000 µf	fixed	EMC	25V	-10+50%
C202	4000 µf	fixed	EMC	25V	-10+50%
C203	1000 µf	fixed	EMC	25V	-10+50%
C204	1000 µf	fixed	EMC	25V	-10+50%
C301	20 µf	fixed	EMC	100V	-10+50%
C302	20 µf	fixed	EMC	25V	-10+50%
C303	300 µµf	fixed	SM	500V	±5%
C304	300 µµf	fixed	SM	500V	±5%

DELAY LINES

DL301	2 µsec.	D5-1000-20	TECHNITROL

RESISTORS

R101	1k	var	comp	¼W	±20%
R102	1k	var	comp	¼W	±20%
R103	1.2k	fixed	comp	½W	±10%
R104	1k	fixed	comp	½W	±10%
R105	1k	var	comp	¼W	±20%
R106	4.7Ω	fixed	comp	½W	±10%
R107	2.2k	fixed	comp	½W	±10%
R108	270Ω	fixed	comp	½W	±10%
R109	470Ω	fixed	comp	½W	±10%
R110	4.7Ω	fixed	comp	½W	±10%
R111	100Ω	fixed	comp	½W	±10%
R112	180Ω	fixed	comp	½W	±10%
R113	1k	var	comp	¼W	±20%
R114	1k	var	comp	¼W	±20%
R115	180Ω	fixed	comp	½W	±10%
R116	100Ω	fixed	comp	½W	±10%
R117	1k	fixed	comp	½W	±10%

RESISTORS CONTD.

118	10k	fixed	comp	½W	±10%
119	10k	var	comp	¼W	±20%
120	Value to be determined on final check out.				
121	1k	fixed	comp	½W	±10%
122	100Ω	fixed	comp	½W	±10%
123	820Ω	fixed	comp	½W	±10%
124	330Ω	fixed	comp	½W	±10%
125	100Ω	fixed	comp	½W	±10%
126	180Ω	fixed	comp	½W	±10%
127	1k	var	comp	¼W	±20%
128	470Ω	fixed	comp	½W	±10%
129	1k	fixed	comp	½W	±10%
130	10k	fixed	comp	½W	±10%
131	1.2k	fixed	comp	½W	±10%
132	10k	var	comp	¼W	±20%
133	Value to be determined on final check out.				
134	1.8k	fixed	comp	½W	±10%
135	1.2k	fixed	comp	½W	±10%
136	470Ω	fixed	comp	½W	±10%
137	2.7k	fixed	comp	½W	±10%
138	3.3k	fixed	comp	½W	±10%
139	180Ω	fixed	comp	½W	±10%
140	Value to be determined on final check out.				
141	1k	fixed	comp	½W	±10%
142	Value to be determined on final check out.				
143	47Ω	fixed	comp	½W	±10%
144	Value to be determined on final check out.				
145	Value to be determined on final check out.				
146	Value to be determined on final check out.				
147	Value to be determined on final check out.				
148	Value to be determined on final check out.				
149	2.7Ω	fixed	comp	½W	±10%
150	2.2k	fixed	comp	½W	±10%
151	2.2k	fixed	comp	½W	±10%
152	2.7Ω	fixed	comp	½W	±10%
201	1k	fixed	comp	½W	±10%
202	47Ω	fixed	comp	2W	±10%
203	220Ω	fixed	comp	2W	±10%
204	1k	fixed	comp	½W	±10%
205	1k	fixed	comp	½W	±10%
206	1k	fixed	comp	½W	±10%
207	25Ω	var	comp	12.5W	±10%
208	25Ω	var	comp	12.5W	±10%

RESISTORS CONTD.

R209	1.5K	fixed	comp	½W	±10%
R210	1.5k	fixed	comp	½W	±10%
R211	470Ω	fixed	comp	½W	±10%
R212	180Ω	fixed	comp	½W	±10%
R213	500Ω	var	comp	0.2W	±10%
R214	100Ω	fixed	comp	½W	±10%
R215	18Ω	fixed	comp	2W	±10%
R216	180Ω	fixed	comp	½W	±10%
R217	500Ω	var	comp	0.2W	±10%
R301	39k	fixed	comp	½W	±10%
R302	39k	fixed	comp	½W	±10%
R303	1.2k	fixed	comp	½W	±10%
R304	18k	fixed	comp	½W	±10%
R305	820Ω	fixed	comp	½W	±10%
R306	22k	fixed	comp	½W	±10%
R307	3.9k	fixed	comp	½W	±10%
R308	10k	var	comp	¼W	±20%
R309	1.2k	fixed	comp	½W	±10%
R310	680Ω	fixed	comp	½W	±10%
R311	560Ω	fixed	comp	½W	±10%
R312	2.7k	fixed	comp	½W	±10%
R313	22k	fixed	comp	½W	±10%
R314	560Ω	fixed	comp	½W	±10%
R315	12k	fixed	comp	½W	±10%
R316	1k	fixed	comp	½W	±10%
R400	2ea. 27Ω	fixed	comp	½W	± 5%
R401	2ea. 27Ω	fixed	comp	½W	± 5%
R402	2ea. 36Ω	fixed	comp	½W	± 5%
R403	2ea. 27Ω	fixed	comp	½W	± 5%
R404	2ea. 27Ω	fixed	comp	½W	± 5%
R405	2ea. 36Ω	fixed	comp	½W	± 5%
R406	2ea. 27Ω	fixed	comp	½W	± 5%
R407	2ea. 27Ω	fixed	comp	½W	± 5%
R408	2ea. 36Ω	fixed	comp	½W	± 5%
R409	2ea. 27Ω	fixed	comp	½W	± 5%
R410	2ea. 27Ω	fixed	comp	½W	± 5%
R411	2ea. 36Ω	fixed	comp	½W	± 5%
R412	2ea. 27Ω	fixed	comp	½W	± 5%
R413	2ea. 27Ω	fixed	comp	2W	± 5%
R414	2ea. 36Ω	fixed	comp	2W	± 5%

TRANSISTORS

Q101	NPN	2N711
Q102	PNP	2N1304
Q103	PNP	2N711
Q104	PNP	2N711

TRANSISTORS CONTD.

Q105	PNP	2N384
Q106	PNP	2N384
Q107	PNP	2N384
Q108	PNP	T2039
Q109	PNP	2N711
Q110	PNP	2N711
Q111	PNP	2N711
Q112	PNP	2N711
Q113	NPN	2N706
Q114	NPN	2N706
Q115	NPN	2N706
Q116	PNP	2N706
Q117	PNP	2N1204
Q118	NPN	2N1204
Q119	NPN	2N706
Q120	PNP	2N1410
Q121	NPN	2N1131
Q201	PNP	2N627
Q202	PNP	2N652
Q203	PNP	2N1218
Q204	NPN	2N1304
Q205	NPN	2N1304
Q206	PNP	2N652
Q301	PNP	T2039
Q302	PNP	T2039
Q303	PNP	T2039
Q304	PNP	2N711

DIODES

CR101	Type 1N34A
CR102	Type 1N34A
CR103	NOT USED
CR104	Type 1N34A
CR105	Type 1N34A
CR106	Type 1N116
CR107	Type 1N34A
CR108	Type 1N34A
CR109	Type 1N116
CR110	Type 1N204
CR201	Type D154
CR202	Type D154
CR203	Type D154
CR204	Type D154
CR205	Type 1N752

DIODES CONTD.

CR206	Type 1N2979A
CR207	Type 1N3017
CR208	Type 1N752
CR209	Type 1N748
CR210	Type 1N748
CR211	Type 1N748
CR212	Type 1N748
CR213	Type 2 E 4
CR301	Type 1N98

CONNECTORS

J101	Conn.	BNC	UG-657-U	
J102	Conn.	BNC	UG-657-U	
J103	Conn.	BNC	UG-657-U	
J104	Conn.	BNC	UG-657-U	
J105	Plug	3 Pin	71S3	Amphenol
J106	Plug	Power Cord		

SWITCHES

S101	2P	6 pos.	Rotary
S102	2P	5 pos.	Rotary
S103	2P	5 pos.	Rotary
S104	5P	6 pos.	Rotary
S105	5P	6 pos.	Rotary
S106	~~4P~~	SPDT 3Pos. ~~2 pos.~~	~~Rotary~~ TOGGLE
S107	6P	4 pos.	Rotary

TRANSFORMERS

T201	Trans. Power	RT-201
T301	Trans. Pulse	B7-502

LAMPS

I201	Lamp	T 1 3/4	10V	.015 Amp.

ACCESSORY PARTS LIST

ASSY BATTERY PAK
B10-A-1202

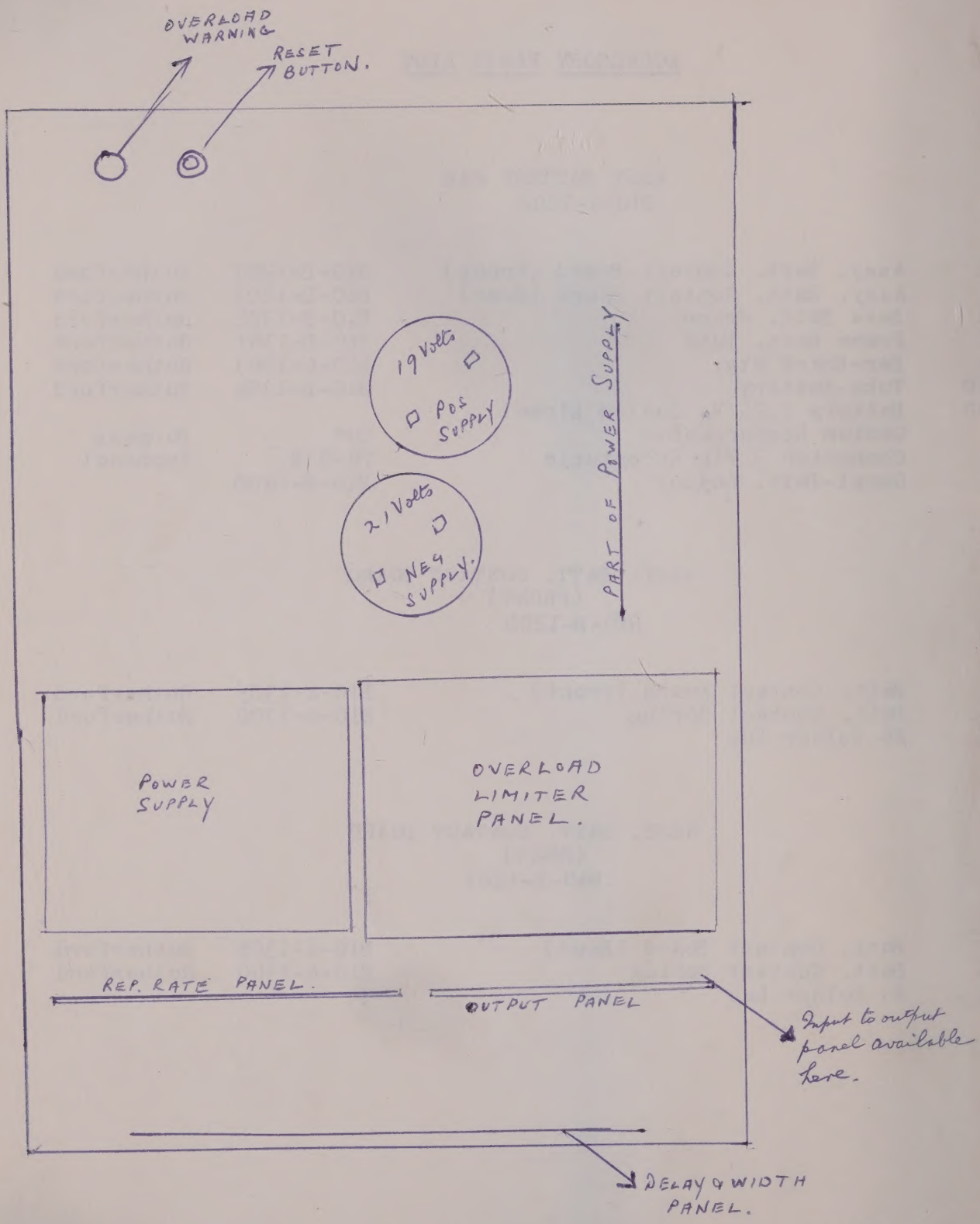
1	Assy. Batt. Contact Board (Front)	B10-B-1200	Rutherford
1	Assy. Batt. Contact Board (Rear)	B10-B-1201	Rutherford
1	Base Batt. Frame	B10-B-1302	Rutherford
1	Frame Batt. Tube	B10-B-1301	Rutherford
4	Bar-Board Mtg.	B10-A-1303	Rutherford
10	Tube-Battery	B10-B-1304	Rutherford
30	Battery 1.25 V. Sealed Nickel Cadium Rechargeable	CD7	Burgess
1	Connector 3 Pin Receptacle	78-S3S	Amphenol
1	Decal-Batt. Layout	B10-B-1400	

ASSY. BATT. CONTACT BOARD (FRONT)
B10-B-1200

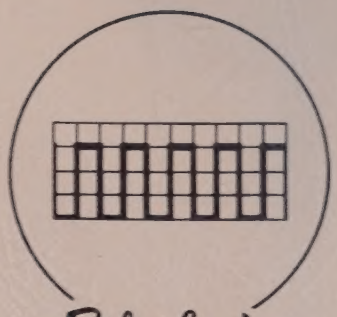
1	Batt. Contact Board (Front)	B10-A-1305	Rutherford
5	Batt. Contact Spring	B10-A-1300	Rutherford
5	#6 Solder Lug		

ASSY. BATT. CONTACT BOARD (REAR)
B10-B-1201

1	Batt. Contact Board (Rear)	B10-A-1306	Rutherford
6	Batt. Contact Spring	B10-A-1300	Rutherford
2	#6 Solder Lug		



NOTE Be sure external trigger polarity switch is in middle "Off" position (It is not marked), when using internal sync to avoid random pulsing.



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